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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 34. January, 1932. No. 397.

A NEGLECTED VARIETY OF HELIANTHUS ATRORUBENS L.

W. A. Anderson

In August, 1923, Professor F. T. McFarland, of the University of Kentucky, and the writer collected a sunflower in western Kentucky, which they later proposed as a new species, *Helianthus kentuckiensis*.[1] In 1928 the writer revisited the station, and obtained some rootstocks which were planted in his father's garden at La Center, Kentucky, where they have grown and flowered abundantly the past two years.

Upon restudy, this plant has been found to be *Helianthus atrorubens* L., var. *pubescens* O. Ktze,[2] and furthermore it has been found that this variety is the only representative of the species in the Mississippi valley, while *Helianthus atrorubens* proper grows only on the Atlantic coastal plain, and in the mountains of North Carolina, Tennessee and Georgia.

Kuntze's selection of a varietal name for this plant is not a happy one, since the true *H. atrorubens* is conspicuously villous, and his brief diagnosis, "Caulis folia pilis parvis munita," does not give the essential differences between the two plants. Nevertheless, examination of the type specimen, now in the herbarium of the New York Botanical Garden, shows conclusively that Kuntze's varietal name should be applied to this plant of the lower Mississippi valley. The type specimen was collected at Cairo (Illinois) "am Mississippi."[3]

About fifty years previous to Kuntze's publication Nuttall had collected this plant in the plains of Arkansas, recognized its close relationship to *H. atrorubens*, and described it as a new species under

[1] McFarland, F. T. and Anderson, W. A., Jr., Amer. Midl. Naturalist ix. 139 (1924).

[2] Kuntze, O., Rev. Gen. Pl. i. 343 (1891).

[3] Kuntze, O., Rev. Gen. Pl., Vorwort, p. x.

the name *Helianthus silphioides*.[1] Torrey and Gray[2] treated Nuttall's name as synonymous with *H. atrorubens*, which disposition of *H. silphioides* has been followed by all subsequent authors.

Before publishing *Helianthus kentuckiensis* as a new species, Dr. McFarland and the writer sent a specimen of it to Mr. E. E. Watson of East Lansing, Michigan, who was then preparing a monograph of the genus. It was at his suggestion that the plant was described as a new species. Later, when his monograph appeared[3] Watson disposed of *H. kentuckiensis* as "not a *Helianthus*," while he treated *H. silphioides* and *H. atrorubens*, var. *pubescens* as synonyms of *H. atrorubens*. This interpretation is difficult to understand, since the floral characters of *H. kentuckiensis* are identical with those of *H. atrorubens;* and the author must have seen other specimens of *H. atrorubens*, var. *pubescens*, including type material of *Helianthus silphioides*.

Synonomy and descriptions of *Helianthus atrorubens* and its variety *pubescens* are as follows:

HELIANTHUS ATRORUBENS L. *H. sparsifolius* Ell., Sketch Bot. S. C. & Ga. ii. 415 (1824). *H. atrorubens*, var. *normalis* Kuntze, Rev. Gen. Pl. i. 343 (1891). Not *H. gracilis* Bert. Misc. Bot. vii. 41 (1848).[4] 7–12 dm. high from a short, woody rootstock: stem more or less hispid, often nearly glabrous above: leaves always in pairs, *ovate to oblong-lanceolate, acute, tapering or abruptly contracted into a winged petiole;* upper surface scabrous-pubescent; lower surface smoother, with long hairs on the veins and petiole; branches of panicle few, elongate, each bearing one to three heads: involucral bracts in about three rows, obovate-oblong, rounded at the tips, mucronulate, glabrous, ciliate: disk 1–1.5 cm. across: disk-flowers purplish brown; ray-flowers yellow: disk-scales three-toothed at summit: pappus of two scarious, ciliolate, tapering scales: achenes quadrate in cross section, dark purple or speckled with yellow, with a circle of hairs around the top and a few on the angles.

HELIANTHUS ATRORUBENS, var. PUBESCENS Kuntze, Rev. Gen. Pl. i. 343 (1891). *Helianthus silphioides* Nutt. Trans. Amer. Phil. Soc., vii. 366 (1841). *H. atrorubens* in part, Torr. and Gray, Fl. N. Amer. 322 (1842), and subsequent authors. *H. kentuckiensis* McFarland

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[1] Nuttall, Thomas, Trans. Amer. Phil. Soc., vii. 366 (1841).

[2] Torrey and Gray, Fl. N. Amer., ii. 322 (1842).

[3] Watson, E. E., Contr. to a Monograph of the Genus Helianthus, Papers of the Mich. Acad. Sci. Arts & Let. ix. 343 (1929).

[4] Watson (l. c.) cites this as a synonym of *Helianthus atrorubens*, but Bertoloni's description and plate show that the name applies to some other plant: "Cephalum solitarium, terminale, . . . diametri sesquipollicaris, . . . squamis . . . lanceolatis, . . . externis brevioribus, acutis, internis acuminatis."

and Anderson, Amer. Midl. Nat. ix. 139 (1924). Much stouter than typical *Helianthus atrorubens*, often 2 meters high, very scabrous-pubescent throughout: leaves all opposite or the upper ones alternate; *blades as broad as long, truncate or even slightly cordate at base;* petiole narrow-winged: flowering heads few, on long naked branches: involucral bracts, scales of the receptacle and flowers similar to those of *H. atrorubens.*

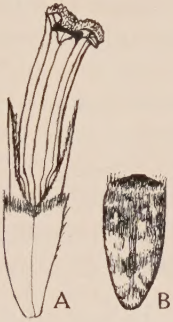

Fig. A. Disk-flower of HELIANTHUS KENTUCKIENSIS MacF. & Anderson.
Fig. B. Achene from type specimen of HELIANTHUS SILPHIOIDES Nutt.

Specimens of *Helianthus atrorubens,* var. *pubescens* which have been examined by the writer are as follows: ILLINOIS: Cairo, *Kuntze,* in 1874 (TYPE). KENTUCKY: Near Clinton, Hickman County, *Anderson,* no. 1041. MISSOURI: Pleasant Grove, *Bush,* no. 304; Dunklin County, *Bush,* no. 72. ARKANSAS: *Nuttall,* fragments of the type of *H. silphioides.* ALABAMA: *Buckley.* LOUISIANA: *Hale,* in 1842.

Material from the type station of *H. kentuckiensis,* McF. and Anderson, collected by the writer and cultivated at La Center, Kentucky has been placed in the Gray Herbarium, and living specimens have been planted in the Harvard Botanical Garden. With the original publication of *H. kentuckiensis* it was stated that a cotype was deposited in "Herbarium Harvard University." There is no such specimen in the Gray Herbarium, so it must have been lost in sending.

As represented by specimens in the Gray Herbarium, true *Helianthus atrorubens* does not extend into the Mississippi valley. Its presence in the mountains of North Carolina, Tennessee, and Georgia, as well as on the Atlantic coastal plain, may be explained on the basis that it has moved out of its ancestral home in the ancient region, now occupied by the southern Appalachian upland, to the present coastal plain, leaving a few isolated survivors in favorable spots in the mountains.[1] Strains from this ancient stock which spread from the ancient region into the lower Mississippi valley have become modified in foliage, but not in floral characters.

The writer is indebted to Dr. S. F. Blake, who examined his specimen of *Helianthus kentuckiensis*, and suggested its relationship to *H. atrorubens;* and to Dr. Elmer D. Merrill, of the New York Botanical Garden, who generously loaned the type specimen of *H. atrorubens*, var. *pubescens*.

The State University of Iowa.

SOME FIELD NOTES: A NEW VARIETY AND SOME FORMS OF PLANTS FROM THE MIDDLE WEST; ALSO TWO FORMS FROM MASSACHUSETTS

H. C. Benke

Pursuing the study of the wild asters in the Chicago Region in the fall of 1929 in continuation from previous years, special attention was given by me to such details as leaf-form, branching habit, association in the field and coloration.

The growing season of the year 1929 in this region seems to have been subject to a most favorable combination of climatic influences resulting in an uncommonly fine development of coloration in plants. And never was there a more gorgeous display of the autumnal tintings in vegetation.

The region about Chicago in a great semi-circle to the north, west and south of some fifty miles, with a twenty-mile tangent southeast into the Valparaiso Moraine in Indiana was revisited and specimens, with field notes, were secured of promising material. Great masses of white, blue and purple were in continued procession—for the genus Aster predominates in our late fall landscape. Other specimens, besides asters, were also secured—all in very limited amounts, since only the new or novel was sought.

In early spring a trip to the southwest as far as New Mexico to near the Rio Grande was made, over Kansas and the Panhandle

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[1] See Fernald, M. L., Specific Segregations and Identities in some Floras of Eastern North America and the Old World, Rhodora xxxiii. 25–63 (1931), also Small, J. K., Altitudinal Distribution of Eastern American *Iris*, Jour. N. Y. Bot. Gard. xxxii. 49–66 (1931).

Plains of Oklahoma and Texas. This was followed by a summer trip over central Kansas. A short summer trip northward, into Wisconsin was also undertaken and a few interesting specimens for the herbarium were obtained on each tour.

Some of this material has been distributed to other workers for their study, but my own examinations aided by such of my field notes as are of taxonomic interest have revealed findings which can now be reported. Particularly, the favorable conditions before mentioned have been utilized in observations on color forms.

The suggestion might here be made that the separation of a new variety or form from a species, based mainly or wholly on color, should not be attempted except from careful observation in the field, or from reliable and authentic notes of the collector. Colors are unstable in dried specimens, rendered even more so by chemical treatment in and for the herbarium. The most startling metamorphoses may take place. To cite a conspicuous example; the floral ligules of *Lactuca Scariola* L. are of a golden yellow in the field, but turn to blue in drying! So the taxonomist describing the plant, wrongly as to color of flowers from an herbarium specimen, would not agree with its true delineation in the field.

Another reason against undertaking taxonomic color work away from the field of living plants lies in the fact that they often have flowers of the intermediate gradations or shades from one color to another; for example from purple-blue to purple-red, or from blue to white, or vice versa.

In taking the long trip before mentioned, to the Rio Grande, one will note with interest how the mesophytic flora of the Middle West gradually changes to the xerophytes of the New Mexico desert. Notes on range of plants were obtained—one of which may here be noted, the case of *Oxybaphus nyctagineus.* This species was an almost constant companion along the railroad-bed as far west and south as Waynoka, Oklahoma. Other species of *Oxybaphus*, however, of sparser growth came into evidence.

On the Panhandle Plains of Oklahoma quite a showing of the first spring flowers enriched the landscape after the middle of April. In places the prairies were bright with them, as *Androstephium coeruleum* (Scheele) Greene, *Corydalis aurea* Willd. var. *occidentalis* Engelm., *Lesquerella gracilis* (Hook.) Wats., *Astragalus lotiflorus* Hook., *Astragalus crassicarpus* Ker., *Astragalus mexicanus* A. DC., *Phlox longi-*

folia Nutt., *Lithospermum angustifolium* Michx., *Oenothera laciniata* Hill, *Anemone caroliniana* Walt.; species of *Comandra, Actinea* and *Hymenopappus* and the splendid *Castilleja sessiliflora* Pursh. Here occurred, also, the curious dwarf *Celtis occidentalis* L. var. *pumila* Muhl. about a meter in height, in maturity. Ordinarily *Celtis* species are large forest trees.

Soon afterwards (about the middle of April), in the Panhandle Plains of Texas the early grasses and sedges, as *Bromus unioloides* (Willd.) HBK., *Eleocharis palustris* (L.) R. & S. and *Carex stricta* Lam. were coming into bloom, along with a flora similar to that just listed from Oklahoma with added species, among them, *Ranunculus Cymbalaria* Pursh and *R. circinatus* Sibth., *Lesquerella ovalifolia* Rydb., *Parosela formosa* (Torr.) Vail, *Sophora sericea* Nutt., *Vicia exigua* Nutt. and *V. sparsifolia* Nutt., *Linum rigidum* Pursh and *L. Berlandieri* Hook., *Glossopetalon spinescens* Gray, *Euphorbia Fendleri* T. & G., *Hybanthus verticillatus* (Ort.) Baill., *Gaura coccinea* Pursh, species in *Lomatium, Cymopterus montanus* T. & G., *Convolvulus arvensis* L., *Gilia acerosa* (A. Gray) Britton, *Lappula texana* (Scheele) Britton, *Lippia cuneifolia* (Torr.) Steud., *Pentstemon albidus* Nutt., *Scutellaria resinosa* Torr., *Pyrrhopappus scaposus* DC., *Aster Leucelene* Blake, *Townsendia grandiflora* Nutt., *Erigeron commixtus* Greene and *Berlandiera lyrata* Benth.

These lists are of interest as indicating the flowers in earliest spring bloom on the plains of the Oklahoma and Texas Panhandles.

The species *Astragalus mollissimus* Torr. appears to be most in evidence about Clovis, New Mexico.

Proceeding south over New Mexico in early May the flowering season becomes well advanced with an array of species whose listing will not be attempted here, but a few having uncommon characteristics, from the southeast part of the state, in the region about Hagerman and Carlsbad, may be cited, specimens of which were collected on the trip and deposited in the Field Museum Herbarium:

Astragalus Nuttallianus DC., *Hoffmanseggia densiflora* Benth., *Euphorbia acuta* Engelm., *Ammoselinum Popei* T. & G., *Cryptantha crassisepala* (Gray) Greene, *Plantago erecta* Morris, *Baccharis Wrightii* Gray and *Verbesina nana* (Gray) Robinson.

During the summer trip to Wisconsin a jaunt was made into the wonderful region, northeast of Two Rivers, where evergreen species parallel the sand dunes of Lake Michigan for miles. From here a curious case of rufescence must be reported. With a plant life, along these narrow ridges, composed almost entirely of evergreens, the large patches, meters in extent, of *Arctostaphylos Uva-ursi* (L.) Spreng. are most luxuriant. The very striking occurrence here was the fact that some of these colonies were of plants entirely green—the leaves being of a lustrous, summer verdure well known in this species; while in other colonies they were of a bright magenta-red, a royal purple, in the ends of the branchlets ranging from about five in number to twenty-five, while the older leaves were of the usual green color. The young leaves became progressively changed to green as they became older and the branches of the plants grew longer, always the younger leaves purple-red and the older, green. This quality was common to an entire colony, sometimes more extensive than a colony wholly green, sometimes less so, but growing on the same sandy soils, at similar elevations of dune ridges and in openings between taller evergreens (*Pinus resinosa* Ait., *Pinus Strobus* L., *Juniperus communis* L. var. *depressa* Pursh, *Thuja occidentalis* L. etc.) under similar conditions of light and shade.[1]

A rare plant, and one hardly suspected as having been able to survive in Manitowoc County, Wisconsin, was found near Wells (Brillion R. R. 3) in the depths of a small swamp, a mile to the south, on June 20, 1921. It is the beautiful *Cypripedium acaule* Ait.[2]

Some twenty years ago, when the writer resided in that neighborhood, *Hieracium aurantiacum* L. was a rare plant. It has become so common that it must now be classed among the pernicious weeds, in spite of its great beauty![3]

During my summer trip over parts of Kansas many field notes were taken but only a few of these can here be reproduced.

Near Kansas City, Missouri, was seen the unusual representation of both *Impatiens pallida* Nutt. and *Impatiens biflora* Walt., growing together in considerable colonies on the springy bluff-sides.

Paronychia Jamesii T. & G. was found in great fields, but so only in one locality—Hoisington, Kansas.

Stenosiphon linifolium (Nutt.) Britton makes a very pretty showing, when massed in the fields as about Concordia, Kansas, but nothing can compare to the great, golden blooms of *Oenothera missouriensis*

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[1] Specimen in Field Museum, *Benke* No. 4953.

[2] In Field Museum and Gray Herbarium, *Benke* No. 4960.

[3] Wells (Brillion R. R. 3), Wis. *Benke* No. 4965. Subject of an article, by myself, in Brillion (Wis.) News, page 1—July 5, 1929, "*Pretty Wildflower is Becoming a Weed.*"

Sims[1] coming almost out of the ground and decking the hill-side pastures about Strong City, Kansas. The flowers, up to 15 cm. across, remind one of some of the great blooms of tropical regions.

At Cottonwood Falls, Kansas, and Strong City nearby were seen many plants (of a weedy nature there) of *Chaerophyllum procumbens* (L.) Crantz, growing together with others qualifying as *C. Tainturieri* Hook. It here appeared as though the classification depended upon the age of the fruits—as to width of intervals between the ribs on their faces. Another case demanding further study, it seems, as to characteristics in respect to age is that of *Vernonia illinoensis* Gleason to differentiate from *V. missurica* Raf. Specimens from Claflin, Kansas, apparently have their pappus in purplish tinge when young, turning tawny when old, which may lead the taxonomist to different conclusions in the same plant, the main character being in the color of the pappus.

The hill-sides about Strong City have yet another characteristic plant to grace them—*Erigeron philadelphicus* L., all with rays snow-white in this region and of very healthy, vigorous growth.

A few notes from the Chicago environs may be given on some outstanding species. Asters, though so abundant here, are rare in the species *Aster macrophyllus* L. To the north, about Glencoe there occur plants of this species in which the rays are not the usual white, but of a rose-color, rather pale, however (*Benke* 4939).

For the first time in my long experience with asters in the field, that rare and beautiful plant with its snow-white rays, *Aster novae-angliae* L. forma *genesseensis* House (*Benke* 4942) was found near Schiller Park (Cook County), Illinois, Sept. 23, 1929 and again, two days later, several miles farther to the southwest near Berkley.[2]

Aster ericoides L. forma *caeruleus* (Benke) Blake[3] (*Benke* 4947) was, for the second time, found near Schiller Park. This charming aster—the type—was first seen near Bushnell, far down-state, Sept. 29, 1927 (*Benke* 4373). Here, again the same blue rays (not purplish, but with the faintest suggestion of it) were in evidence; with the same strict habit, apparently lifting it above the white-rayed plants of *A. ericoides* in proximity; and the plainly later anthesis, so that, if seen in the field, it would appear to be eligible to varietal rank.

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[1] Specimens in Field Museum and in Gray Herbarium, *Benke* No. 5153.

[2] In Field Museum and in Gray Herbarium, *Benke* No. 4941.

[3] See Benke, RHODORA **30**: 77–79. 1928 and Blake, RHODORA **32**: 139. 1930.

The collecting trips of 1929 are uncovering various novelties, some of which can now be listed as below:

I. To the north of Chicago there is a great marsh—the famous Skokie—now partly drained by ditching and road-building operations. At one time it was a number of miles in length and a half mile wide in places, and is still no inconsiderable stretch of swampy marsh. The plant association here includes vast fields of Aster species and their kin, the beautiful Boltonias, growing in luxuriant profusion. They are particularly at home along the ditches and rivulets, formerly centering about a sluggish but considerable stream.

Far beyond the borders of the marsh, near some streamlets in the central reaches, we may see some patches of magenta red (rose-red, in fact) among the great fields of white. These are the rare Boltonias of a color (but more in rose) resembling that of a somewhat similar variety with larger flowers and wider leaves sometimes cultivated—but here we are far away from any garden.

The plant is worth distinguishing with a name:

BOLTONIA ASTEROIDES (L.) L'Hér., forma **rosea**, f. nov., a forma typica ligulis roseis differt.—ILLINOIS: Glencoe, Cook County, Oct. 6, 1929. *H. C. Benke* 4940 (TYPE, Field Museum).

With the species; rays rose-red. No other specimen in Field Museum Herbarium.

II. In the valley of the Arkansas River at its great bend southward in central Kansas nestles a beautiful city named for this feature—Great Bend. The valley here has a distinctive flora typical of the river bottoms of the central plains. Springy places with saturated areas about have their own plant associations, with *Aster exilis* Ell. very conspicuous. Here, also, occur *Heteranthera limosa* (Sw.) Willd. in great numbers. The flowers in their spathes show a deep blue color, but at one place there is a small colony of pure white ones. No intermediate tints being in evidence, the form may be named:

HETERANTHERA LIMOSA (Sw.) Willd., forma **albiflora**, f. nov., perianthio albo.—KANSAS: Great Bend, Barton County, Aug. 10, 1929. *H. C. Benke* 5127 (TYPE, Field Museum).

Like the species; perianth pure white.

III. Oklahoma, too, in its western parts is rich in the plains flora and an early-flowering feature is the dotted blue in parts of the landscape, *Androstephium coeruleum* (Scheele) Greene.[1] But here was one in pure white. The specimen was secured; a few others of the same color form being past anthesis were not taken and the luck which was trusted to, for finding further samples for duplicates, did not arrive that day though many more blue ones were seen.

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[1] This name truthfully suggests the floral color, in this region—rather than *A. violaceum* Torr.

Androstephium coeruleum (Scheele) Greene, forma **leucanthum**, f. nov., a forma typica non nisi perianthio albo differt.—Oklahoma: Mooreland, April 22, 1929. *H. C. Benke* 5004 (type, Field Museum).

IV. High ridges and hills in long slopes rise from valleys far below in north central Kansas, each with its distinctive flora—very luxuriant in the valley. About Concordia, among its most common plant life is *Verbena stricta* Vent., acres in extent. Hardly, however, is it to be classed as a weed, for it thrives only in limited areas and at limited times, certain soil conditions seeming to be necessary for its maintenance.

The only area where the roseate-corolla form of this plant has been seen in my experience lies to the northwest of the city. Here, in a field of creek bottom some twenty acres in extent, was found an almost solid mass of the species in the usual purplish-blue, with lesser patches, here and there—about a quarter part of all—of the rose-colored form. This variation of color made a very charming impression in the landscape's features. With no intermediate colors to confuse, there can be distinctly separated:

Verbena stricta Vent., forma **roseiflora**, f. nov., a forma typica differt corolla roseo-rubra.—Kansas: Concordia, Cloud County, July 24, 1929. *H. C. Benke* 5164 (type, Field Museum).

Form with species; corolla rose-red.

V. Visiting the old home farm where my youthful days were spent near Claflin, Kansas, patches of brilliant yellow showed at intervals along Cow Creek which runs through the land. These were masses of Silphium with flowering-heads unusually large and showy—not tall for this genus, but well massed. After careful comparison with much herbarium material and in literature, justification is felt for the separation of an interesting variety:

Silphium integrifolium Michx., var. **mesochorum**, var. nov., a forma typica differt caulibus glabris pallidissimis in sicco interdum discoloribus; folia ut bracteae involucri subtus glabra supra scabra setoso-ciliata; planta quam in forma typica humilior, capitulis paucis majoribus usque ad 7 cm. diam. speciosis; achaeniis circa 11 mm. latis, margine circa 2 mm. lato.—Kansas: Claflin, Barton County, Aug. 19, 1929. *H. C. Benke* 5176 (type, Field Museum).

With the species, but stem glabrous, very pale—almost white—

shining in the field, discoloring in parts in age or in drying; leaves all opposite, entire, except the lower cauline leaves which are remotely dentate with low teeth, glabrous below, harsh above and ciliolate on the margins; plants lower than the species, but the few heads much larger, up to 7 cm. in diameter, very showy; achenes about 11 mm. long with margins about 2 mm. wide.

The variety differs from other glabrous or subglabrous species or varieties in *Silphium*, as the var. *laeve* T. & G. of the species, *S. laevigatum* Ell., or *S. speciosum* Nutt., in some or all of such characters as its low stature (less than a meter in height) but large flower-heads with but medium-sized, broadly-winged achenes, and especially its very pale, almost white, shiny stem.

VI. When one travels, day after day, among fields of wild asters, with an endless array in masses of white, and in shades of blue and purple, a variation to red, or rose is most striking. In this region the growing season comes to a grand climax with a great burst of bloom of aster species, in the main.

In all the Chicago region the species *Aster pilosus* Willd. with its variety *demotus* Blake[1] is predominant. Great numbers of these have been seen by me for years past, always with the typical white rays, so my pleasant surprise may readily be imagined when a small colony—and another one not far away—of this species with most beautiful rose-red ray-florets suddenly came to view in an old field near Valparaiso, Indiana. The novelty is here named:

ASTER PILOSUS Willd., forma **pulchellus**, f. nov., a forma typica differt caulibus foliisque sparse hirsutulis; ligulis pulchre roseo-rubris. —INDIANA: Valparaiso, Porter County, Sept. 17, 1929. *H. C. Benke* 5083 (TYPE, Field Museum).

Differing from the species, which is typically very villous-hirsute, and from its var. *demotus* Blake, which is glabrous, in being but sparsely hirsutulous in all specimens examined from the two colonies. Rays a beautiful rose-red. The distinctions might give it varietal rank, but I prefer to leave it conservatively as a form, though the application of the terms variety and form are rather ambiguous.

Its vigorous growth, with its great masses of pretty flower-heads, gives this plant its name. No more beautiful aster, wild in the fields, is known to me.

Other specimens of my 1929 collection likely to uncover something new in species, varieties or forms require further study before definite reports can be made on them.

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[1] This variety and its species have been confused till recently with *A. ericoides* L. See Blake, RHODORA **32**: 136–140. 1930.

VII. Through the kindness of Dr. Blake some interesting exchange material in *Compositae* has come into my hands, and two of the numbers of his collecting have yielded distinct color forms which are deemed well worthy of recording. So, we will now take a great stride from the Central West to New England—to Massachusetts. The first:

Solidago nemoralis Ait., forma **pallens** f. nov., ligulis et disco ochroleucis; ceteris ut in forma typica speciei.—Massachusetts: South Easton, Sept. 8, 1926. *S. F. Blake* 9656 (type, Field Museum). With the species; rays and disk very pale, cream color.

Dr. Blake's note states, "Rays and disk yellowish-cream color; at least two clumps of this form, normal form also present; open, gravelly ground."

When one considers the usual deep yellow color of this species (carried even into the bracts) it will be admitted that an interesting plant has been here disclosed by its collector.

VIII. The second form is one of *Aster linariifolius* L.

This fine species occurs in this region some forty miles to the westward in the morainic gravel hills about Crystal Lake and is very common to the southeast in the dune region of northern Indiana. It has never been my good fortune to come upon a white-rayed plant of this species.[1] An interesting separation of form can here be made:

Aster linariifolius L., forma **leucactis** f. nov., a forma typica differt ligulis albis.—Massachusetts: Stoughton, Sept. 17–24, 1927. *S. F. Blake* 10514 (type, Field Museum).

To quote the collector "Rays pure white, disk yellow; about 20 clumps, some of good size, scattered over stretch of 100 yards among the abundant lavender ones—in shrubby, gravelly field, Stoughton."

Chicago, Illinois.

Potentilla tridentata, f. aurora in the White Mountains.—On August 5, 1931, I collected what appears to be *Potentilla tridentata*, f. *aurora* Graustein, Rhodora xxxiii. 211 (1931), between Tuckerman's Ravine and the summit of Mt. Washington, New Hampshire. The petals, which fell while the plants were in the vasculum, were pink, especially toward the base, and the pressed material shows as unusual amount of red coloring in the styles, filaments and calyx-lobes.— N. C. Fassett, University of Wisconsin.

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[1] The only variation from the usual violet-blue (nearly blue) color of rays in this species which has been found by me is a specimen with rays considerably lighter in shade than common. It is, Indiana: Inland Manor, Lake County, Sept. 18, 1925. (*Benke* 5088).

THE VARIATIONS OF ASTER FOLIACEUS IN NEW ENGLAND

Ludlow Griscom and R. J. Eaton

In Rhodora, vol. 17, 1915, pp. 13–16, Prof. M. L. Fernald published a valuable critique of the hitherto little recognized *A. foliaceus* Lindl. in extreme eastern British America and northern New England, a species further complicating the difficulties of clearly distinguishing the large-headed Asters of the section *Vulgares.* This plant with few, large heads, with essentially equal herbaceous or foliaceous involucral bracts "is quite as variable as other species of its affinity, but in spite of its great variability it holds within the Hudsonian and Canadian area indicated the characters above defined and seems to be a pronounced trend such as is ordinarily considered a species in the genus *Aster.*" Prof. Fernald then continues to show that lower plants from alpine and more northern habitats, with short monocephalous branches leafy about the heads, are typical *A. foliaceus* Lindl.; other taller plants have ample leaves and many of the heads on long almost erect naked or nearly naked peduncles (var. *frondeus* Gray); others differ in more serrate leaves, more spreading or arching branches and peduncles (var. *arcuans* Fernald); still others have leafy peduncles and very crenate leaves (var. *crenifolius* Fernald); another variation has the median leaves abruptly contracted and broadly subpetioled (var. *subpetiolatus* Fernald); while a final variation strongly resembles the last in foliage, has the habit of typical *A. foliaceus,* but is easily distinguished by the small usually paired heads and the absence of outer foliaceous bracts (var. *subgeminatus* Fernald). All of these variations were cited from the Gaspé Peninsula, Quebec, or from Newfoundland, but no mention was made of New England material.

The senior author was quite familiar with most of these variations in Quebec and Newfoundland, and was much surprised to find a plant of this affinity with a totally different aspect in the Connecticut River Valley in New Hampshire and Vermont last summer. This plant in its narrowly linear-lanceolate leaves tapering gradually from the middle to a slightly clasping base and in its sometimes much smaller heads is disquietingly close to *A. longifolius* Lam., but is easily separable in possessing well developed herbaceous bracts, some of which are longer than the inflorescence is high. An examination of the material in the Gray Herbarium and the herbarium of the New England Botanical Club shows that this form is the dominant one from the lowlands of northern New England. It *decreases rapidly* northeastward where some of the other varieties become abundant, and very few sheets indeed exist from localities in Quebec and Newfoundland, where relatively southern elements in the flora do not occur. It is also particularly characteristic of river- or lake-banks throughout its range. It is clearly one extreme of the species, with a definite geographic trend, and would appear fully as worthy of formal separation as other described varieties. It may be characterized as:

ASTER FOLIACEUS, var. **sublinearis**, n. var., caule tenui, 1½–5 dm. alto, glabro vel piloso; foliis patentibus vel subascendentibus tenuibus glabris lineari-lanceolatis vel lanceolatis acuminatis, basi angustatis vel cordato-amplexicaulibus, obscure serratis vel subintegis, mediis ½–1 dm. longis ½–1 cm. latis; involucro 5–8 mm. alto, bracteis lanceolatis herbaceis vel exterioribus foliaceis elongatisque.

Stem 1½–5 dm. high, glabrous or pubescent; leaves spreading or somewhat ascending, thin, glabrous, linear-lanceolate or lanceolate, acuminate, narrowed at base or cordate-clasping, obscurely serrate or subentire; the median ½–1 dm. long, ½–1 cm. wide; involucre 5–8 mm. high, the bracts lanceolate, herbaceous, or the outer foliaceous and elongate.—VERMONT: alluvial bank of Connecticut River, Weathersfield, Windham County, September 4, 1931, *Eaton and Griscom*, no. 14754 (TYPE deposited in Gray Herbarium).

It should be noted that the variations given in the description, other than the bracts, exactly parallel those of *A. longifolius* Lam. and, as in that species, the broader-leaved forms with leaves less attenuate at the base are distinctly rarer southward. Both extremes are represented in the type-collection sheets. Several sheets examined from Quebec are transitional to typical *A. foliaceus*, and Prof. Fernald records similar transitional specimens for other varieties. In so polymorphic a species and section this is only to be expected. Indeed it is merely a question of time and experience before the collector will find plants which impugn in one way or another one or more elements of a specific concept in this most interesting genus.

An older generation ignored such specimens, or in a few famous cases deliberately destroyed them. It is the modern fashion eagerly to collect these less usual mutations, and as a result either to question the value of the older specific concepts or to call the majority of *Aster* specimens hybrids. Both courses are childish, and futile in devising a stable taxonomy, and both ignore the fundamental biology of the group, a genetically unstable and aggressive one, many elements of which have recently recaptured or entered much new territory in northeastern America and have not as yet had time to crystallize by elimination into specific concepts sufficiently definite to satisfy the longings of the amateur in the field or the taxonomist in the herbarium.

An excellent illustration of this principle is the record of *A. foliaceus* from Sandisfield, Berkshire Co., Massachusetts, in Hoffmann's Flora, p. 337. This specimen has been most carefully studied, and we are quite unable to endorse this determination. It is true that the heads have well developed herbaceous bracts. But the whole stem from the root up is harshly pubescent or hispid, the leaves are hairy or even scabrous on the upper surface, with very broadly clasping bases, and we have no hesitation in declaring this specimen to be an abnormal form of *A. puniceus*, extreme forms of which are known to develop herbaceous bracts. The only other conceivable course would be to regard this specimen as a hybrid between *A. foliaceus* and *A. puniceus*. This course would be biologically preposterous, until some evidence is discovered to show that typical *A. foliaceus* occurs in the region from which the supposed hybrid came. Considerable evidence exists that *A. foliaceus* does *not* grow there, nor could it be reasonably expected.

We give below a list of the varities of *A. foliaceus* definitely occurring in New England, citing the majority of the specimens, and all those seen of var. *sublinearis*.

1. Typical A. FOLIACEUS Lindley. NEW HAMPSHIRE: Numerous collections recorded by Pease in Flora of Coos Co. from alpine and subalpine habitats of the White Mts. VERMONT: a single collection from the summit of Mt. Mansfield (Gray Herbarium).
2. Var. ARCUANS Fernald. NEW HAMPSHIRE: Berlin Falls, July 27, 1899, *W. W. Eggleston*, no. 1806. Now in Gray Herbarium, determined by Fernald. Duplicate in N. E. B. C.
3. Var. SUBLINEARIS Griscom and Eaton.

In Gray Herbarium: NEWFOUNDLAND: headwaters of Rocky River, Whitbourne, Avalon Peninsula, 8 Aug. 1911, *Fernald & Wiegand*, no. 6319; Rushy Pond, Exploits River, Aug. 1911, *Fernald, Wiegand & Darlington*, no. 6320; Buchan Junction, 19 July, 1930, *K. P. Jansson;* Table Mt., Port-à-Port Bay, 10 August, 1910, *Fernald & Wiegand*, no. 5121. QUEBEC: River St. Augustin, Saguenay Co., 6 Aug. 1915, *St. John*, no. 90,764; Natashquan, north shore, Gulf of St. Lawrence, 1 Aug. 1928, *Victorin & Rolland-Germain*, no. 28,700; Ste. Anne des Monts, Gaspé Co., 3–17 Aug. 1905, *Collins & Fernald;* St. Raymond, Co. Portneuf, Aug. 1914, *Victorin*, no. 617. NOVA SCOTIA: Yarmouth, 24 July 1920, *Fernald, Bean & White*, no. 22,780. MAINE: Boundary Lake, Aroostook Co., 12 Aug. 1902, *Eggleston & Fernald;* Limington, York Co., 28 Aug. 1916, *Fernald & Long*, no. 14,735. NEW HAMPSHIRE: Berlin, 27 July, 1899, *Eggleston*, no. 1301; North Woodstock, Grafton Co., 3 Aug. 1915, *Fernald*, no. 11,910; Plymouth, Grafton Co., 30 July, 1915, *Fernald*, no. 11,912.

In Herb. N. E. B. C.: NEW HAMPSHIRE: Gorham, Coos Co., 27 Sept. 1916, *Pease*, no. 16,942; Thompson & Meserve Purchase, 12 Aug. 1910, *Pease*, no. 12,834; Bath, Grafton Co., 18 Aug. 1917, *Fernald*, no. 15,586; Ashley's Ferry, Claremont, Sullivan Co., 7 Sept. 1931, *L. Griscom & F. W. Hunnewell*, no. 15,046. VERMONT: Weathersfield, Windham Co., 4 Sept. 1931, *Eaton & Griscom*, no. 14,754; West River, Dummerston, Windham Co., 5 Sept. 1931, *Eaton & Griscom*, no. 14,758.

TWO NEW EVERGREEN HOLLIES FROM CENTRAL FLORIDA

JAMES B. MCFARLIN

WHILE I was engaged in field work for the University of Michigan during the past year, an apparently new and localized species of *Ilex* was discovered in the scrub about Lake Marion, Polk county, Florida. It grows mixed with *Ilex opaca* Ait. and *Ilex arenicola* Ashe but is readily distinguished from both by its extremely small leaves and compact manner of growth. Several colonies have been found scattered through the scrub. Only sterile material was at first collected, February 22, 1931. Flowers were obtained March 17, 1931 at the original station, and again on May 27, 1931 from another location.

Growing with *Ilex arenicola* Ashe on the inland sand dunes about Lake Jackson, near Sebring, Florida, I discovered on June 9, 1931 a small shrub which at first sight I took to be the same as the new Ilex from the Lake Marion region, but further examination showed that it was not the same. In spite of diligent search only the one bush could be found. As the dunes supported an abundant growth of *Ilex arenicola* Ashe and but a single bush of this odd Ilex I propose to give it the name *Ilex arenicola* Ashe f. *sebringensis*. Although it is very clearly distinct, it may have originated by mutation as a single plant and cannot be described as other than a form until it is found to be more widely distributed. It will have a distinct horticultural value if it can be got into cultivation by propagation from the original plant.

A careful study of herbarium material and of the literature failed to bring to light names or descriptions of the foregoing hollies.

ILEX **pygmaea,** sp. nov. A compact shrub or small tree 2.5 to 3 m. high, with very closely appressed ascending branches. Bark of the trunk and branches gray, very young shoots brown, puberulent. Leaves coriaceous, persistent, numerous, dark-green and nearly glabrous above except for a slight puberulence along the sunken mid-rib, pale yellow-green and glabrous or essentially so beneath, flat or sometime slightly revolute, obovate to obovate-elliptic or sometime elliptic, 1.5 cm. (usually 2.5 cm.) to 3 cm. long and 0.6 cm. to 1.5 cm. wide; margin sinuate-spinescent with ascending teeth; apex truncate or acute, mucronate; base acute or rounded, sometimes slightly cuneate; petiole 4 to 5 mm. long, pubescent. Flowers borne in few-flowered cymes on the new growth. Petals 4, fused at the base, white, broadly ovate, 3 mm. long and 2 mm. wide, cupped, imbricate in the bud; stamens 4, alternate with the petals, slightly shorter than the petals; filaments glabrous, dilated at the base, about 1.4 mm. long; anthers ovate, 1.4 mm. long and 1.2 mm. wide, ciliate, acute or short acuminate. Fruit not seen. A close relative of *Ilex arenicola* Ashe, from which it differs in the extremely small, usually flat leaves and its dense habit of growth. Since it is found growing together with *Ilex arenicola* Ashe in the scrub, its characteristics are undoubtedly genetical and not environmental. TYPE (in the Herb. Univ. Mich.), *J. B. McFarlin* 4508, Lake Marion, Polk County, Florida; in the deep scrub.

Frutex vel arbuscula parva 2.5–3 m. alta; ramis appressis ascendentibus; cortice trunci et ramorum majorum griseo; ramulis brunneis puberulis; foliis planis vel paululo revolutis, obovatis vel ellipticis coriaceis persistentibus numerosis atroviridibus superne glabriusculis sed costa media impressa sparse puberulis, inferne pallide luteoviridibus glabris vel sparsissime puberulis, 1.5–3 cm. (plerumque 2.5 cm.) longis, 0.6–1.5 cm. latis, sinuato-spinosis, apice truncatis vel acutis, mucronatis, basi acutis vel rotundatis; dentibus ascendentibus; petiolis 4–5 mm. longis pubescentibus; floribus solitariis vel in cymis paucifloris in ramulis novellis; petalis 4, basi connatis, albis, late ovatis, 3 mm. longis, 2 mm. latis, canaliculatis, nondum apertis imbricatis; staminibus 4, quam petalis alternantibus paulo brevioribus; filamentis glabris, basi dilatatis, circa 1.4 mm. longis; antheris ovatis, 1.4 mm. longis, 1.2 mm. latis, ciliatis, acutis vel breviter acuminatis. Fructus ignotus. Ilici arenicolae affinis a qua differt habitu humillimo et denso foliis multo minoribus plerumque subplanis. Specimen typicum (in Herb. Univ. Mich.) *J. B. McFarlin* 4508, prope Lake Marion, Polk County, Florida.

ILEX ARENICOLA Ashe, f. **sebringensis**, f. nov. A small compact shrub 0.5 to 1 m. high with very densely ascending branches. Bark of trunk and branches gray, that of the new growth a light brown, puberulent. Leaves coriaceous, numerous, persistent, deep green and glabrous above or minutely puberulent along the sunken mid-rib, yellow-green and glabrous or essentially so beneath, 1.5 cm. to 3 cm. long and 3 mm. to 11 mm. wide; blade usually strongly revolute with a sinuate-spinescent margin; apex generally acuminate but sometimes truncate or acute with a long spine-like termination; base cuneate or rarely acute; petiole pubescent about 4 mm. long. Flower and fruit not seen. Differs from the typical form in the smaller, narrow leaf with mucronate apex. Since it occurs in the same habitat with the type its characteristics are undoubtedly genetical and not environmental. TYPE (in the Herbarium University of Michigan) *J. B. McFarlin* 5714, Sebring, Highlands County, Florida; in scrub on inland sand dunes.

Frutex compactus parvus 0.5–1 m. altus; ramis densis ascendentibus; cortice trunci et ramorum griseo; ramulis brunneis puberulis; foliis coriaceis, persistentibus, numerosis, atroviridibus superne glabriusculis vel costa media impressa minute puberulis, inferne luteo-viridibus glabris vel glabriusculis 1.5 cm.–3 cm. longis, 3 mm.–11 mm. latis, plerumque valde revolutis, sinuato-spinosis, apice truncatis, acuminatis, vel acutis mucrone longo praeditis; basi cuneatis vel raro acutis; petiolis 4 mm. longis, pubescentibus. Flores et baccae ignotae. A forma typica differt foliis minoribus angustioribus apice acuminato mucronatis. Specimen typicum (in Herb. Univ. Mich.) *J. B. McFarlin* 5714, prope Sebring, Florida.

UNIVERSITY OF MICHIGAN.

NOTES FROM SOUTHEASTERN WISCONSIN.—The following color variations are thought worthy of record:

LIPARIS LILIIFOLIA (L.) Richard, forma **viridiflora**, n. f., petalis labelloque pallide viridibus. Petals and lip light green.

We have been finding a few of this green-flowered *Liparis* (reminding one somewhat of *L. Loeselii*) each year for several years in an area where there are several hundred normal plants. It might be observed here that the Manual's characterization, "flowers 5–15," in *Liparis liliifolia* is too modest in the case of our Wisconsin plants. "Flowers 5–40" are not at all uncommon with us.

VERBENA STRICTA Vent., forma **albiflora**, n. f., corollis albis. Seemingly rare; seen only once, along a roadside where it was interspersed with the normal purple-flowered form.

CIRSIUM DISCOLOR (Muhl.) Spreng., f. ALBIFLORUM House. Rather common along roadsides in our southern counties.

We have been watching closely for white-flowered forms of other thistles, but they appear to be confined to *C. discolor*.

LIATRIS SCARIOSA Willd., forma BENKEI Macb.

Evidently a very rare form, only a single plant with white flowers having been observed by the writer during the years that he has been familiar with the purple-flowered form. The latter is very abundant with us and very prominent in the summer floral aspect.

HELIANTHUS GROSSESERRATUS Martens, forma **pleniflorus**, n. f., floribus omnibus ligulatis.

This double-flowered form is occasionally met with along roadsides and railroads in southeastern Wisconsin and across the line in Illinois. I have watched closely for double flowers in other species of *Helianthus*, but without success.

Sheets of all the above excepting *Liatris scariosa* are deposited with the Gray Herbarium; the latter is in my own herbarium.—S. C. WADMOND, Delavan, Wisconsin.

AN ILLUSTRATED FLORA OF QUEBEC.—Readers of RHODORA have become familiar with the painstaking and scholarly discussions, group by group, and the considerations of problems in the flora of Quebec by Brother Marie-Victorin (see RHODORA, xxviii. 18–20; xxx. 79–80; xxxi. 19–20; xxxii. 11–15) and members of the New England Botanical Club have taken pride in the accomplishments and versatility of their genial fellow-member at the University of Montreal. Now, one of Brother Victorin's former students, our other member from the Province of Quebec, Father Louis-Marie (Professor Louis Lalonde) of l'Institut Agricole d'Oka, whose happy personality will be remembered by all who knew him when he was a graduate student at Harvard, has brought great credit to his former teacher at Montreal as well as to himself by issuing for the Province of Quebec a manual,[1] which should start many students on the road to botany. Intended especially for the young naturalist, the book gives very briefly a general introduction to botany, with simple (perhaps too concise) introductions to cells and tissues and the principal organs of higher plants; in a word, a much abbreviated summary of morphology. This is followed by directions for collecting and preparing specimens and the preparation of the herbarium; a brief introduction to the systems of classification; and a condensed resumé of the groups of plants found in Quebec, ending with keys, descriptions and illustrations of the majority of vascular species of the province.

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[1] PÈRE LOUIS-MARIE, O. C., *Flore-Manuel de la Province de Québec*, Illustrée de plus de 2100 dessins par MARCEL MAKHES. Contribution No. 23, Institut Agricole d'Oka. Price, post-paid, in the United States $2.00. (Canadian).

In such a brief volume (320 pp.), with the first pages in the nature of a text-book, the treatments of species are, necessarily, reduced to simple diagnoses and those from "le Bas-Québec" (Côte Nord, Labrador, Anticosti and Gaspé) are often omitted. But for the warmer and more densely populated regions of Montréal, Trois Rivières and Québec it is very complete.

The illustrations by M. Makhes have a decidedly continental European style. Grouped several on a page they are remarkably life-like and well drawn, though often a bit too crowded for quick and clear interpretation. It is unfortunate that they had to be printed as pages of text, for if they could have had good plate-paper they would show to greater advantage. As it is they are vastly superior in their display of detail to most drawings available in eastern America. Such plates as no. 1 (illustrating in very French fashion the Cell), 5 (flower and inflorescence), 14 (*Pinaceae*), 15 (*Typhaceae, Sparganiaceae*, etc.), 18 (*Festuceae*), 20 (*Aveneae*), 37 (*Betulaceae*), 63 and 64 (*Umbelliferae*) and several others are beautifully reproduced in the copy at hand; but some others have suffered from an intensification of blackness and the crowding already mentioned.

Altogether the book is a notable step forward for French Canadian botany and every ambitious young naturalist, whether speaking French or English, in eastern Canada or in the northern United States will want a copy. Older botanists, too, will find the book a worthwhile addition to their stock of reference works. There is nothing quite like it in either country. Canadian botanists are to be congratulated upon the two leaders who are developing botany in Quebec upon progressive lines. Their published works represent quite different approaches and methods of presenting results—both to be highly commended. May they long live to coöperate and mutually develop their science in Quebec and throughout Canada.—M. L. F.

Volume 33, no. 396, including pages 231 to 258, 1 plate and title-page of the volume, was issued 12 December, 1931.

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STATE OF WASHINGTON PLANTS

During a partial botanical survey, I have collected a few extra sets for sale at the usual prices. Many are from type localities, especial attention having been given this year to the Olympic and Wenatchee Mountains.

Correspondence invited.

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